ELECTRIC REFRIGERATION NEWS

The business newspaper of the electric refrigeration industry

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How New York Edison Company Sells Electric Refrigeration

Maintains Laboratory for Testing—Advertises and Demonstrates, but Turns Sales Over to Dealers

By R. W. T. Ricker

The New York Edison Company furnishes electric power to the island of Manhattan, the Bronx, and Yonkers. It accordingly has more subscribers than any other company and its methods of acquainting the public with leading makes of electric refrigerators are, as a consequence of more than usual interest.

The company maintains a large testing laboratory on Van Dam Street, New York City, where all electrical appliances recommended or sponsored by it are first tested. When a manufacturer of an electric refrigerator applies for recommendation of his product he is required to furnish one to the testing engineers at the Van Dam Street laboratory. Here the most exhaustive tests are carried out, cost of operation is measured, in short, every test which modern refrigeration operation has shown to be desirable must be passed by each machine. Nor does the watchfulness of the company end here. The organization and standing of the manufacturer is investigated, number of years he has been in business, his financial standing, size of his service department, location of his dealers; for the guiding slogan of the New York Edison Company is: "make a friend of every customer." Every possible precaution is taken that subsequent failure of any appliance to operate properly is the remotest of possibilities.

When the rigorous tests have been met satisfactorily the manufacturer is allowed to place one or more types of his product in the main show room of the company, located at No. 124 West 42nd Street, New York City. Here a competent staff of salesmen are on duty to explain the operation of the various types of machines on display and to answer questions of the prospective buyer. The policy of the company is to be absolutely impartial; no single machine is recommended. If the customer asks about a Kelvinator, for example, he is shown a Kelvinator. If he is interested in an Icemaster, it is the Icemaster the salesman shows and talks about. If the subscriber has no particular make in mind, he is invited to look at them all and to decide for himself which one seems best suited to his needs.

After the customer decides upon his machine, the dealer designated by the manufacturer to handle sales promoted by the company is notified, and the refrigerator is installed and serviced by the dealer. The company keeps no stock, the refrigerators in the main show room and in other small show rooms scattered throughout the district the company serves are merely samples. If the subscriber wishes to pay for his machine in installments the payments are added to his monthly statement and the dealer is paid by the company. If, on the other hand, full payment is made at the time of installation, the dealer is paid directly.

To provide against failure of the service organizations of the various companies, the New York Edison Company has service men of their own who may be sent out at any time. Mr. Kelly, chief of the Appliance Bureau, says that the occasion to use this branch of their service is indeed rare, so well do the service departments of the local agencies function. The company derives no revenue in the form of commissions on refrigerators sold through their efforts, being content with the sale of current. For the sale of one commodity—electric current—is the business of the New York Edison Company. All activity of the company is devoted to it, and the sponsoring of electrical appliances is merely an additional service that the company offers its subscribers.

Once a year the New York Edison Company devotes a week to an electric refrigerator show. This show is held at Irving Place and Fifteenth Street, usually in the early spring, at which time the main part of their extensive space at this address is given over to all types of electric refrigerators recommended by them.

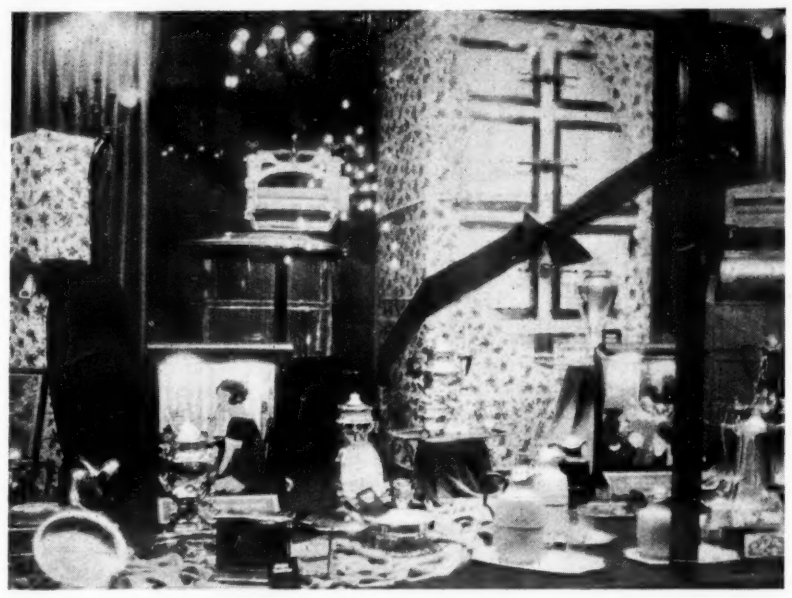
Direct and Newspaper Advertising

Periodically the company sends out to all of its subscribers with their monthly statement a folder describing the advantages of electric refrigeration in the home and enclosing a return card on which further information or the call of a representative is requested. Some of these folders are particularly appealing and the company has found that they are as effective in bringing returns when repeated as are new ones.

The company has spent approximately $12,000 in newspaper advertising of electric refrigeration alone in the last three years and in other general advertisements electric refrigeration always has its place.

Fred E. Hazard formerly with Servel and first chairman of the advertising committee of the Electric Refrigeration Council

Fred E. Hazard, well known throughout the electrical industry and active leader in the cooperative electric refrigeration advertising program, now has his headquarters in the Star Building, St. Louis, where he is doing special work as a sales and advertising counselor.



"So Big" Electrical Appliances In a Christmas Gift Setting

Capitalizing on the Size of the Electric Refrigerator by Featuring it as a Gift Package

By Ernest A. Dench

You may remember the child in Edna Ferber's novel, "So Big," who, when he learned to say "So big," raised his hands above his head. Expressive, to say the least. "So big" applies to several electrical household appliances, particularly the electric refrigerators. It offers an opportunity for the dealer who has an appreciation of human interest as a vital ingredient of a window display, to capitalize the Edna Ferber incident.

Dramatizing the size of these labor-saving devices breaks away from the too often employed plan of permitting them to fill in the rear of a trim devoted to all kinds of electrical goods. In such cases the bulky objects are introduced to build up the window. They will, however, stand on their own merits if effectively emphasized in a single trim.

Christmas is coming, and with it, the gift seeker. He or she approaches the holiday shopping in a festive mood—a mood which is enhanced by the showy window displays arranged at this season. A thousand and one gifts, even the prosaic kind dolled up for the occasion in attractive containers, or amid colorful surroundings. An interesting experiment would be to display the "so big" appliance minus the Christmas "fixings" for several days and then handle it in a trim radiating the Christmas Spirit. Our guess is that the latter would lead the way in sales.

Every gift that is worth having these days is packed in a pretty box and tied with ribbon bows; if gifts do not come this way, the stores will supply the boxes, the ribbon and the tissue paper. This applies especially to small merchandise, but it can be done for display purposes, at least, with the refrigerator.

Electric Refrigerator as a Gift "Package"

It was performed to effective advantage by the Electric Shop, Cincinnati, Ohio, who stationed an electric refrigerator (in white enamel) at the center rear. This refrigerator was wrapped in holly decorated paper, which was broken with studied carelessness in front, as though a woman had let curiosity get the best of her so as to investigate what was inside the monster package. It still had its wide red ribbon bow intact, in a diagonal position. Different styles of washers were stationed at either side of the refrigerator. At each rear end came a vacuum cleaner packed in its long, narrow cardboard carton, and an outer wrapping of holly adorned paper, fastened with a red ribbon bow around the middle. Billows of white drapery took care of the foreground floor division, on which reposed a number of small electrical appliances. The background was hung with soft green velvet, decorated with holly branches, red friz and Christmas bells.

The Modern "Old Mother Hubbard"

The "so big" package presentation does not exhaust the Christmas display possibilities of your merchandise—not by a long shot. For instance, the Mellott Sales Company, Freeport, Illinois, blossomed forth with a modern interpretation of "Old Mother Hubbard." She was present as a cut-out, designed according to the best nursery rhyme traditions. Instead of finding her cupboard bare, it groaned with good things to eat. And her "cupboard" was an electric refrigerator, the open doors of which revealed a number of chilled desserts and salads to tempt the most jaded appetite. A showcard pointed out that no housewife need find herself in Old Mother Hubbard's predicament, with an electric refrigerator at her elbow.

When the Showroom Is "So Big"

The term, "so big" is connected with an electrical merchandising in another way. Generally the public service company has a showroom redolent of the "wide open spaces." There are lofty ceilings, wide columns and generous expanses of floor space, the barrenness of which literally cries out for suitable decorations.

What the Des Moines Electric Company, Des Moines, Iowa, did was to ornament the huge pillars with large holly wreaths—one hanging from the top of each pillar. Evergreen garlands were either strung from pillar to pillar, or from one chandelier to the other.

Over the cashier's cages at the rear was a large cardbord banner, illustrated in colors with a beaming Santa at both ends. "Merry Christmas" was lettered across the banner. Tables placed either around the pillars, or in the vicinity thereof, broke the large vacant spaces, and also provided display space for Christmas gifts in small appliances.

Symptoms and Remedies Charted for Central Station Service Men

Common Causes of Service Calls Listed in Accordance With Suggestion of Public Utility President

By C. U. Carpenter, General Manager
Frigerator Division, General Necessities Corporation

Alex. Dow, president of the Detroit Edison Company, in an address to a group of electric refrigeration executives published in the October sixth issue of ELECTRIC REFRIGERATION NEWS, suggested that electric refrigeration manufacturers work out a list of simple tests as a guide to central station service men in making a diagnosis of the trouble. He called attention to the help which the central station service man may give by sending in a prompt report of the symptoms, even though he is insufficiently trained to make the necessary adjustments.

I believe the Absopure charts, two of which are illustrated herewith, form the answer to Mr. Dow's excellent suggestion. Examining these, you will see that we start with the usual complaint given by the householder over the telephone, such as the "ice cubes freeze too slowly." This condition may result from five causes, which are listed up under the heading of "Symptom."

In order to further determine the cause, our service man will proceed to the items listed under "Examine For." By examining the unit he, therefore, quickly determines the character of the trouble and then proceeds to the "Remedy," as illustrated.

We find such charts very useful, as it enables the service man to determine both the "cause of" and the "remedy for" any difficulty both quickly and accurately. These two charts illustrate the general principles, which are covered in the set of 12 charts in all. (*See page 4*)

In the case of central station service men, and also of small dealers, who handle a variety of products, we often find that it is difficult for them to absorb and retain in their minds the necessary details of the service of electric refrigeration units, mainly because they have so many additional duties to perform.

While they may be trained in our schools, unless they are on this electric refrigeration job almost continuously, they are likely to forget their teaching and training. We find that such charts are an excellent reminder to such men, and, when properly used, will make it almost impossible for them to make an error.

Service is, indeed, the corner stone of electric refrigeration business. Coupled up closely with the marketing of these units, is prompt and efficient service. The public has become so accustomed to service that they resent any failure of a company to "toe the mark" in this respect. We have learned that our business cannot progress any faster than our service will allow, and we, therefore, are going to a great deal of trouble and heavy expense in developing and training our service departments. We have found that any method such as these charts that can assist the service man in going from a "complaint" to the "cause" is a great aid in securing accurate results.

UNDESIRABLE PUBLICITY FROM ACCIDENTS

Newspaper Reports May Cause Needless Fear of Equipment

Two serious accidents in which electric regrigeration equipment has been involved, one in the East and another in the West, have resulted in undesirable newspaper publicity recently.

Two deaths in Danbury, Connecticut, attributed to milk having been contaminated from gas leaking from a refrigerator, received considerable attention in New York and other Eastern newspapers. From Denver comes the story of a serious accident to employees of the Public Service Company, due to an explosion from escaping gas while installing a refrigerator.

The following article, reported from Bridgeport, Connecticut, appeared in the New York *Times* November 14th:

"Confidence that 'American genius can and will master and eliminate the harm and dangers' attached to electrical refrigeration is expressed by Coroner John J. Phelan in his official finding, issued today, in the deaths of Frank W. Force and his nine-year-old grandson, Warren Force Fromm, in Danbury, Oct. 14. The man and boy were killed by gas leaking from a refrigerator in the Force apartment.

"No one is found criminally at fault by the Coroner in connection with the deaths.

"The important query arising in the case, the Coroner states, is 'Can the cold unit of the icebox be so constructed and the gases in it so controlled from harmful leakages because of mechanical and other defects that users may and can with confidence be assured of no harmful results to bodily health from the use of that contrivance in their homes?'

" 'The escaping gas,' his findings continue, 'was shown upon investigation to be a compound of methyl bromide and ethyl chloride in equal parts in volume and 65 per cent. and 35 per cent., respectively, in weight.'

"It was shown that both Mr. Force and his grandson drank water poured from a milk bottle which had been standing in the refrigerator for some time.

" 'From the circumstances shown it is not an unfair presumption, from the statistical evidence presented and the report of the State chemist, that the refrigerant used in the Danbury apartment is probably no more noxious, if as much, than the gases used for like purposes by other refrigerating companies,' says the Coroner."

The Denver *Post* of November 13th reports two explosions, one from refrigerator gas and the other from an acetylene generator, under one headline. The following paragraphs deal with the refrigerator accident:

"M. W. Manley, 27 years old, 705 York Street, was badly burned by an explosion of methyl chloride gas in the Lyons market, 335 East Seventh avenue, where he was installing a refrigerator. The gas, which had escaped from the apparatus unknown to Manley, exploded when he lighted a match to look for a bolt he had dropped. Firemen were called to extinguish the blaze, which resulted from the explosion. Damage to the store was estimated at $100. T. L. Bond, 315 West Ellsworth avenue, who was working with Manley, escaped injury. Both Manley and Bond are employes of the Public Service company.

"Manley's condition is considered serious. In addition to burns, he inhaled a quantity of the gas."

Electric Refrigeration Will Share in $500,000,000 Home Market

E. M. Herr, president, Westinghouse Electric & Mfg. Co., in an address delivered at the convention of the Pennsylvania State Association of Electrical Contractors and Dealers recently held at Philadelphia, said:

"In the term 'home market' I include all electrical and all appliances which may be sold for use in the home. I think $500,000,000 would be a conservative estimate of the amount which the public will spend this year for home electrification.

"The first use of electricity in the home was for lighting, and lighting still takes the lead as the primary necessity in all homes. In dollar volume electrical appliances increased the home market possibilities to a great degree.

"The quick public acceptance of electric refrigeration is an indication of the stries being made in educating the public as to the value of electric service in the home. No other electrical device has met with such an enthusiastic reception. Many other electrical conveniences for the home are available and new ones are constantly being developed, so that this field presents wonderful possibilities for future growth.

"The continued popularity of electrical conveniences for the home depends primarily on the principle that they function as a convenience; that they do cleanly and efficiently the tasks they are designed and sold to do, without constant breakage and annoyance to the housewife."

A. P. DeSaas President of Coldak

A. P. DeSaas, vice-president of Coldak Corporation, which concern recently completed the purchase of the Alaska Refrigerator Company, has been named president of the combined organization.

ABSOPURE DENIES INFRINGEMENT

General Necessities Corporation Answers Delco Complaint

In the initial issue of ELECTRIC REFRIGERATION NEWS attention was called to the patent suit filed by the Delco-Light Company, Dayton, Ohio, against the General Necessities Corporation, Detroit, Mich., on account of the importance of this litigation in determining the validity of certain claims affecting fundamental features of electric refrigeration equipment. Copies of the complete "Bill of Complaint" were offered to subscribers upon request. A considerable number of requests were received from manufacturers desiring to inform themselves on the subject.

The answer of the General Necessities Corporation recently filed in the United States District Court by Edward N. Pagelsen, attorney, makes a general denial of the Delco-Light claims. An interesting feature of the answer is a list of patents which the defendant company claims anticipated those set forth by the plaintiff. A number of copies of the complete answer have been obtained by ELECTRIC REFRIGERATION NEWS and will be furnished upon request to *subscribers*.

Patents Involved In Suit

The Delco-Light suit is based upon the following patents:

Kramer 1,280,765, Oct. 8, 1918.
Kramer 1,281,027, Oct. 8, 1918.
Joy 1,502,914, July 29, 1924.
Wolf 1,291,334, Jan. 14, 1919.
Wolf 1,337,175, April 13, 1920.
Tibbetts 1,276,450, Aug. 20, 1918.
Tibbetts 1,296,879, Mar. 11, 1919.

The General Necessities Corporation in its answer asserts that the claims set forth were anticipated by the following patents:

127,180, Martin and Beath	May	28,	1872
213,487, J. G. Wolf	Mar.	18,	1879
476,358, A. T. Ballantine	June	7,	189?
630,616, A. T. Marshall	Aug.	8,	1899
668,033, L. K. Bohn	Feb.	12,	1901
716,091, C. C. Palmer	Dec.	10,	1902
794,462, G. A. Masters	July	11,	1905
962,704, Emerson and Bishop	June	28,	1910
1,037,423, W. G. Brady	Sept.	3,	1912
1,050,910, F. Bishop	Jan.	21,	1913
1,117,786, C. A. V. Carlsson	Nov.	17,	1914
663,587, L. Single	Dec.	11,	1900
807,981, R. Whitaker	Dec.	19,	1905
811,833, W. L. R. Emmet	Feb.	6,	1906
819,635, J. G. Callan	May	1,	1906
849,576, R. Schulz	Apr.	9,	1907
941,376, R. Lucas	Nov.	30,	1909
1,085,326, O. Dahlke	Jan.	27,	1914
1,243,712, Clark and Coffey	Oct.	23,	1917

and by the following foreign patents:

British patents:			
8,925, Allison	June	10,	1890
6,590, Martineau	Mar.	28,	1905
6,115, Keene	Mar.	13,	1906
German patent:			
185,011, Prott	May	17,	1907
French patent:			
348,043, Thomson-Houston	Mar.	29,	1905

Also that said inventions were explained and illustrated in Knight's Mechanical Dictionary, published in 1876 by Hurd and Houghton, New York, N. Y., on pages 1164 to 1169, inclusive.

Another interesting feature of the answer is the claim that refrigerators embodying the inventions listed in the bill of complaint were known to various persons and organizations before the filing of the several patent applications. The following are listed:

Harry C. Hayes, 2564 Baldwin Avenue, Detroit, Mich.
A. C. Biedeman, c/o Carry Ice Cream Co., Washington, D. C.
A. C. Koenig, 31 Hudson Place, Weehawken, N. J.
Colorado Ice & Storage Co., Denver, Colo.
Arctic Ice Cream Co., Detroit, Mich.
Fred W. Wolf Co., Chicago, Ill.
C. C. & F. R. Robbins Fish Co., Detroit, Mich.
Wilson Creamery Co., Huntington, W. Va.
Port Richmond Hyeia Ice & Cold Storage Co., Mariners Harbor, N. Y.
Noaker Ice Cream Co., Canton, Ohio.
Home Dairy & Standard Ice Cream Co., Springfield, O.
Peoples Ice Company, Detroit, Mich.
Brunswick Kroeschell Co., Brunswick, N. J.

R. W. Foley and F.S.Fenton, Jr. of the Servel Corp. at Atlantic City during the American Gas Association Convention

New Jersey-Penn. Ice Cream Manufacturers Meet

The twenty-first annual convention of the Association of Ice Cream Manufacturers of Pennsylvania and New Jersey was held at Trenton, N. J., November 16, 17 and 18. W. E. Hoffman of the W. E. Hoffman Co., Tyrone, Pa., is president, and W. H. List, of the Puritan Ice Cream Co., Newark, is secretary of the association.

Among the speakers on the program were: O. S. Jordan, president, Dairy & Ice Cream Machinery & Supply Association; Robert C. Hibben, bureau of service and statistics, National Association of Ice Cream Manufacturers; H. J. Bailey, Electropure Sales Corp.; Gray D. Holdom, Menasha Printing and Carton Company; James W. Kellogg, director, Bureau of Foods and Chemistry, Harrisburg, Pa.; F. M. Cockrell, editor ELECTRIC REFRIGERATION NEWS; M. W. Hill, H. L. Neuman Co.; Prof. C. D. Dahle, associate professor of dairy manufacture, Pennsylvania State College; Fred Rasmussen, secretary, National Association Ice Cream Manufacturers; Dr. H. B. Costill, director of health, State of New Jersey; Prof. J. W. Bartlett, professor of dairy husbandry, Rtugers University; and George C. Cusack, sales manager, Dry-Ice Corp. of America.

Bond Now Vice-President of Alaska Refrigerator

Joseph B. Bond has been elected vice-president of the Alaska Refrigerator Co., Muskegon, Mich. He has been director of sales for several years.

INSTALLATION OF SIX KELVINATORS IN GAMBEE APARTMENTS BASEMENT, WHITE PLAINS, N. Y.

Index of Printers' Ink Articles on Advertising and Merchandising Electric Refrigerators

Following is a list of the articles on advertising and merchandising electric refrigerators which have appeared during the past four years in *Printers' Ink* and *Printers' Ink Monthly*. These publications are widely read by sales and advertising executives and complete files are maintained by the public libraries in most large cities.

Other publications in which articles have been published dealing with electric refrigeration are invited to following lead of *Printers' Ink* and furnish a record to ELECTRIC REFRIGERATION NEWS. Men and women, previously connected with other industries, are constantly entering this new field. They are actively searching for information which will help them in meeting their new problems.

Does It Pay to Make Elaborate Preparation for the Salesman's Call?	June	1926;	p.	40
Selling Old Products in Competition with New Inventions	February	1926;	p.	35
Give Your Dealers Ideas in Trade Copy. (The Servel Corp. features five demonstrations that any dealer can use in demonstrating Servel Refrigerators)	November	1925;	p.	40
Advertised Products Help Sell Electric Refrigerators	December	1924;	p.	106
World-Wide Survey Made of Refrigeration Market	July 29,	1926;	p.	152
Welcoming the New Competitor (Electric refrigeration not to be death blow for manufacturers of ice)	July 22,	1926;	p.	190
Ice Industries Censure Disparaging Copy	July 15,	1926;	p.	141
A New Idea in Co-operative Advertising (Electric refrigerator manufacturers promote industry rather than blow their own horns)	May 20,	1926;	p.	193
Co-operative Advertising Campaign on Electric Refrigerators	Feb. 11,	1926;	p.	10
How Shall We Service the Product? (How the Kelvinator Corp. handles the service problem)	Nov. 12,	1925;	p.	148
A Little Sectioning for Bitter Rivals (Manufacturers of electric as well as ice refrigerators are set attaching each other's appearances in advertising)	Aug. 15,	1925;	p.	156
Picayune? Not At All (Kelvinator Corp. tells how to overcome products interference with radio reception)	June 25,	1925;	p.	173
"Success Stores of Dealers Make Popular Trade Appeal"	Aug. 25,	1923;	p.	35
Putting Persuasive Power Into a Questionnaire (Automatic Refrigerating Co.)	May 10,	1923;	p.	125
Selling and Service Problems in the Distribution of Specialties	Jan. 25,	1923;	p.	150

Windmuller Joins General Refrigeration Company

R. L. Windmuller, formerly general sales manager of the Harry L. Hussman Refrigerator Co., St. Louis, has been appointed sales manager of the wholesale division of the General Refrigeration Co. His headquarters will be at Rockford, Ill.

Clapp Succeeds Aylesworth

Paul S. Clapp, formerly special assistant to Herbert Hoover, Secretary of Commerce, has been appointed managing director of the National Electric Light Association, succeeding M. H. Aylesworth, who has become president of the newly organized National Broadcasting Company.

Distributors—

Send us the names of your sales and service men and we will mail sample copies of Electric Refrigeration News to them.

Many distributors have already done so in order that their employees may become better informed about the business. (The live ones will subscribe.)

Electric refrigeration is new and developing rapidly. Improvements are being made in equipment, new tools and accessories are being put on the market, selling helps and training courses are being offered, advancements in sales and service methods are constantly coming out.

Electric Refrigeration News has located many sources of highly valuable information which will be extremely helpful to your organization. The history and background of the business are being published, important data on equipment and companies is being made available. Facts and figures on the market are coming in.

Electric Refrigeration News is devoted to this one industry. Every column will be interesting to the men and women in the business.

Electric Refrigeration News
409 E. Jefferson Ave., Detroit

Copeland Official on Western Trip

W. D. McElhinny, vice-president and sales manager of the Copeland Products, Inc., left Detroit October 22nd to visit Los Angeles, San Francisco, Portland, Seattle and other western cities. He reports that sales of Copeland electric refrigerators during 1926 show an increase of 960 per cent over the same period last year.

Appointed Iroquois Distributor

Household Utilities, Inc., 38 Park Ave., Paterson, N. J., has been appointed a distributor for the Iroquois Electric Refrigerator Co. of Philadelphia.

Subscription Coupon

BUSINESS NEWS PUBLISHING CO.
409 EAST JEFFERSON AVENUE
DETROIT, MICH.

DATE_____

Gentlemen:

Please enroll me as a subscriber to ELECTRIC REFRIGERATION NEWS, the Business Newspaper of the Electric Refrigeration Industry, at the special introductory rate now being offered.

☐ Three years, one dollar ☐ One year, fifty cents

I am enclosing payment in the form of

☐ Check ☐ P. O. Order ☐ Cash

Name_____

Company_____

Street Address_____

City and State_____

☐ **Note:** If it is inconvenient for you to enclose payment with this order, check this square and invoice will be mailed. Do it now, while you have the blank before you. It will save the time and trouble of writing a letter, and you will be sure to get the next issue.

New Food Laws in Great Britain Will Help Commercial Refrigeration

U. S. Department of Commerce Reports Survey of Market Retail Trades Offer Best Field Now

A very complete and enlightening analysis of the market for small electric refrigeration in the United Kingdom is contained in special circular No. 518 just issued by Harris E. Dexter, Chief of the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce. The report is based on information submitted by Assistant Trade Commissioner John Speaks, London, and a letter from Consul William J. Grace, Sheffield. The report, prepared by K. T. Nelson, follows:

Potential Market

"There is but a limited use of ice in Great Britain. The British people have not accustomed themselves to cold food and drink, and many consider them to be injurious to health. The purchase of ice for the purpose of preserving perishable goods is confined almost entirely to important retail stores, restaurants, butcher shops and cafes. In spite of the cool and relatively even temperature of this region, there is need for refrigeration to properly preserve foodstuffs because of comparatively high humidity.

Food Preservative Regulations to be Adopted

"Regulations concerning the use of preservatives in foods are to be adopted in Great Britain on January 1, 1927. So far as refrigeration is concerned, the most far reaching effect of the new order is the complete abolition of borax as a preservative of foods. This affects bacon, ham, butter, margarin and cream, as well as boracized eggs and other miscellaneous commodities. Limits have also been placed on the amount of sulphur dioxide and benzoic acid to be used in sausages, dried fruits, wines, hams, etc. Methods of refrigeration should become imperative and an increased market and demand for electric refrigerators for domestic and commercial use would thus arise. The average householder, with no real conception of modern small unit refrigerator equipment, may simply buy in smaller quantities such as suffice for immediate needs; but at any rate a demand should be created for small commercial installations in business concerns maintaining stores of perishable goods.

Retail Trades a Large Undeveloped Field

"The new regulations will, of course, affect the principal perishable commodities, which now in part contain preservatives, from the time they are shipped until they are consumed. On the other hand, existing facilities in some cases and better distribution in others will perhaps obviate the use of increased refrigeration. In certain cases, however, notably the retail trades, it would seem that the regulations will be a decided stimulant to a normally good market.

"It appears that the retail trade offers the largest undeveloped field for refrigerating equipment. Refrigerators or cold rooms are comparatively unused in the

(*Continued on Page 5, Col. 1*)

MARKET FIGURES FROM McGRAW-HILL SURVEY

"In the opinion of utility executives the present market for domestic electric refrigeration is from 10 to 30 per cent of the residential customers. It is significant to note that family income cannot be taken as a hard and fast criterion of a customer's ability or inclination to purchase an electric refrigerator. It is an important element in a market survey, but many companies that have arbitrarily set up a prospective list of customers with incomes of $5,000 or more have had their calculations upset by sales to a number of customers with incomes of less than half that figure. It is also a mistake to judge the number of potential purchases by the percentage of homes now using ice. There will always be a large field for ice refrigeration, and much will depend upon education of the public to the use of ice as well as electric refrigeration.

"Considering that 30 per cent of the domestic customers may be regarded as legitimate prospects for electric refrigeration would mean that there is in the United States today a possible market for about 4,500,000 units. It is a question how many years would be required to reach a 30 per cent saturation, entirely disregarding the number of new customers that will be added from year to year. The existing sales, installation and service organizatons will this year sell close to 250,000 domestic and commercial units, but at that rate would require eighteen years to sell 4,500,000 units.

"Dealers of all classes are increasing their sales forces and the estimated sales for 1927 by all dealers as shown in Table XV or 154 localities is 125,020. This is about two and a half times the number of units sold during the first seven and one-half months of 1926. Based on the estimates of these dealers, the existing dealers in the whole country expected to sell a total of 470,502 units in 1927. Of this number the estimates show that about 28 per cent will be commercial and 72 per cent domestic. This figure does not take into account the appointment of additional new dealers or the entrance of power companies not now selling electric refrigerators but which have expressed the intention of organizing for their sale.

"What next year's total sales will be depends upon the extent to which manufacturers, distributors and retail outlets can expand their sales, installation and service organizations. These must be recognized as the neck of the bottle through which manufacturers' production must be squeezed. It should be comparatively easy in 1927 for all outlets to sell at least 50,000 units. Actual sales will probably reach 750,000, and unless some unexpected condition arises recurrence of delayed shipments and extraordinary servicing requirements, the latter figure may be exceeded."

Commonwealth Edison Features "Gold Coast" Apartments

Another "GOLD COAST" APARTMENT BUILDING, SERVEL EQUIPPED!

In Chicago, the electric refrigerator you encounter most in fine homes and luxurious apartments is the Servel, installed, serviced and guaranteed by the Commonwealth Edison Company, 72 West Adams Street.

SERVEL
Electric Refrigerators

The advertisement shown in reduced size above is one of a series being run in the Chicago newspapers by the Commonwealth Edison Co. Each advertisement features some one of the "gold coast" apartment buildings which is equipped with Servel electric refrigeration.

WHO SHOULD SELL ELECTRIC REFRIGERATION?

Buyer Expects Service 365 Days a Year

By E. R. Mason, Sales Promotion Dept., Central Hudson Gas and Electric Co., Poughkeepsie, N. Y.

Will the electrical refrigerator industry benefit by the experience of other industries that have taken many years to develop their business? At first thought you may be inclined to say that they have profited by the experience of others, and cite as proof the tremendous growth of the electrical refrigerator industry in a comparatively short time.

Let us analyze this growth and determine how sound it is. An overgrown boy may develop a weakness that sets him back in later life. I believe many electrical refrigerator manufacturers have had "setbacks" in their progress because they have failed to profit by the experience of others.

Cites Experience of Automobile Manufacturers

I recall an instance that occurred in the early days of the automobile industry. A certain automobile manufacturer, eager to grab all the territory possible, gave the agency of their car to a jeweler in a fair-sized city. He took it on as a sideline. The car was a good one as compared to other cars in those days, and the jeweler sold a few, but he was not prepared to give service. In fact, he did not want to be bothered with service. As a consequence the cars did not give satisfaction, and although the motor car manufacturer continued to build good cars, it was a number of years before they were able to get re-established in that territory.

The same thing is happening to the electrical refrigerator industry today. I can cite many instances where electrical refrigerators have been sold in territories where no service was available, to the detriment of that make of refrigerator and to the whole industry.

I do not believe that there is any mechanical appliance in general use today that parallels the electric refrigerator in its needs and accomplishments. Here is an appliance that should give 24 hours service 365 days a year. The purchaser of an electrical refrigerator has a right to expect this service without the inconvenience of interruption. Have manufacturers, distributers and dealers given enough thought to the future needs of the owner?

Good machines are being built today, but the tendency seems to be to decrease selling prices. Electrical refrigerators can be sold at present prices. Would it not be to the advantage of the manufacturer in the long run to use at least a portion of any saving in manufacturing cost to insure future service to owners? There are many ways this may be accomplished, and the additional confidence that it will give to the skeptical prospect will help to bring in many additional sales.

"Dealers may come and dealers may go, but the manufacturer wants to go on forever."

Ross Schram Joins General Necessities

Ross Schram, former general manager of the Detroit Street Railway, and an associate of Senator James Couzens in the refrigerator business, has been named assistant to the president of the General Necessities Corporation, makers of Absopure Frigerators.

Broad Policy of Rochester Utility Shown in Refrigeration Issue of Company Magazine

A recent issue of the *Gas and Electric News*, published monthly by the Rochester (N. Y.) Gas and Electric Company, is mostly given over to the subject of electric refrigeration. It contains articles entitled: "Evolution of Food Preservation," by Jessie Cary Grange; "It's Summer Time in the Kitchen All the Time with Frigidaire," "The Basic Principle of Electric Refrigeration," by G. McLarty; "Proper Refrigeration of Food as Told by General Electric," "Kelvinator Named After Lord Kelvin, the Distinguished Scientist," "Servel Serves Electrically and Symbolizes Today's Ideal Electrical Methods," "Electric Refrigeration on 'Main Street'," by G. McLarty. The magazine is edited by Floyd Mason of the Public Relations Department and consists of 94 pages with cover in colors.

While the company sells but one make of electric refrigerator, manufacturers of competing makes were invited to contribute to the magazine in order that the company's customers might get a more complete picture of electric refrigeration service. The company's policy in this regard is explained in an editorial which is reprinted below:

"Our Refrigeration Issue is attempted at the suggestion of our President, Mr. Robert M. Searle, whose broad-minded company policy is generally known by Company customers, local electrical dealers and organizations and national bodies whose aim is the harmonious co-ordination of all agencies interested in the utilization of electricity for the best interest of humanity.

"One local competitor in the field of electrical refrigeration told us recently that he thought it extremely fair of this Company to wish to present a story of his refrigeration unit in the Company's magazine and other companies have intimated as much.

"But the Company's efforts in this connection were not planned merely to make it appear to be a "good fellow" in the local field of electrical utilization. It is deeper-seated than this. It is based upon economics and good business.

"While this Company does sell a refrigerating unit that it is willing to stand back of as firmly as it does any of the other electrical appliances or devices it distributes, its major function in the community is the generation, distribution and servicing of electric current, gas, steam, etc.

"Inasmuch as its chief product operates all the other electrical refrigerators sold in this community, this Company is naturally keenly interested in the successful distribution and operation of any and all of the other units sold here.

"And in vindication of Company policy it may be said that these reasons are not selfish. They are based upon a strong desire to increase sales generally, to popularize electricity and thereby by mass production to help keep down manufacturing costs and maintain the present low rates of electricity enjoyed by its customers.

"Many persons feel that the cost of electrical refrigerating units are at present prohibitive for ordinary families. This cost, however, does not seem unreasonable when carried over a period of several years in which one figures the cost of ordinary ice and allows a reasonable allowance for convenience and other features incident to the more modern method, the virtues of which may be read about in this issue of our magazine.

"Most buyers of electrical refrigeration consider that their money is well invested. Scores of contractors are building electrical units into the new houses they are planning, for the public is beginning to demand them. Therefore, if you are interested in this subject, do not hesitate to call upon any of the organizations which have prepared stories for this issue. They will be more than glad, as this Company always is, to present their case to you as a part of the educational service they maintain."

ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Electric Refrigeration Industry

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NOVEMBER 20, 1926

Patents

AMERICAN inventive genius is renowned the world over. The patent laws of the United States which are assumed to grant to the inventor the exclusive rights to his accomplishment for a period of seventeen years, are undoubtedly one of the contributing factors to the progress and prosperity of the country. They have lent encouragement to inventive minds and have frequently resulted in handsome rewards. Outstanding successes have created a general impression that to "get a patent" is synonymous with riches.

It is one thing to get a patent, however, and quite another to establish one's rights to the rewards thereof. A patent, as someone has expressed it, is "a license to start a fight." Court action is usually necessary to determine the merits of the original, as well as conflicting claims.

A new and growing industry, with a product for which there is a widespread market and therefore offering possibilities for large financial profit, and especially one which involves a combination of mechanical, electrical and chemical features, some new and others well-known, may be expected to provide a battle-ground for patent litigation. Patent lawyers who are familiar with electric refrigeration say that the patent situation is particularly difficult and involved. A number of cases must be thoroughly threshed out in the courts, in all probability, before the validity of numerous broad claims, and a multitude of minor ones, will be definitely known.

PATENT suits present a problem to the publisher, especially when the paper is new, with policies in the making. Many patent suits are friendly—merely formal action to arrive at a decision and an understanding. Others create bitterness and personal animosities. A question of editorial fairness may be raised, but more important is the matter of effect upon the distributors, dealers and users of the products involved. Another consideration is the volume of news material if the paper attempts to report *all* legal action undertaken.

Electrical World, full of years and wisdom, has an established policy governing the handling of patent news in both editorial and advertising columns. It reports, and permits advertisers to announce, *decisions* only. Many years ago, when the electrical industry was young and patent troubles were rampant, the editors took stock of the situation. It was found that a large percentage of the suits instituted were never carried to court, or at least to a final decision. Hence the editors decided to print only the news of completed action.

ELECTRIC REFRIGERATION NEWS will probably find it advisable to adopt a similar policy. Right now, patents represent a vital problem of the industry. It appears to be an essential service of a publication specializing in this field to call attention, at least, to the importance of careful study of the patent situation by manufacturers contemplating entering this attractive field. It is our hope that a way will be found for adjusting the various conflicting claims in an equitable manner and to the end that the industry may go forward on a sound and substantial basis with rewards to all in proportion to the service rendered.

A Story for Manufacturers

ONCE upon a time a sales manager had an idea. He thought of a new way to sell his product. The more he thought about it the surer he became that it was a good idea. He called in ten salesmen and told them about the new way to sell. They agreed to try it out.

When the salesmen tried to tell the prospects, they could not get the story over. They came back discouraged. They doubted whether it was such a good idea.

The sales manager thought of more arguments. He collected facts and figures to back up his points. Again he convinced his salesmen that the idea was good. Again they went out to sell it to the prospects.

But the prospects brought up objections and asked questions which the salesmen could not answer. They had not studied the new idea carefully enough. They were not fully convinced themselves. They could not carry conviction.

The sales manager became impatient. "I will tell the story to the prospects myself. I will write it out from start to finish. I will print it and mail it to them," he declared.

So he wrote it and had it printed. Then he instructed the mailing department to send copies to a thousand prospects. Personally, he gave a copy to each salesman. "Now," he said, "I have told the prospects what you should tell them."

The salesmen went out and *sold*. They brought in the business. They said it was a *great* idea. It was a success.

Then a funny thing happened. It was discovered that the thousand copies had not been mailed out at all. They were still in the mailing room. They had not carried the message to the prospects. The salesmen did it.

Moral No. 1—One of the greatest benefits from advertising to the consumer is the effect it creates upon the salesman.

Moral No. 2—When you spend $8,000 to advertise your electric refrigerator to the public, use five per cent more to tell the same story to the trade by reproducing the advertisement in ELECTRIC REFRIGERATION NEWS.

Moral No. 3—Tell the story to *all* distributors and dealers so that the entire industry will appreciate the merits of your product and respect it accordingly.

Toronto League Bulletin Shows Apartment Houses with Electric Refrigeration

G. W. Austen, manager of the Electric Service League of Toronto, Canada, who initiated the "Red Seal Plan" to promote adequate wiring in the home, and who has been publicly recognized on several occasions for this contribution to the progress of the electrical industry, is now giving special attention to electric refrigeration. Pictured above are front and back sides of a folder recently issued by the league in which ten large apartment houses, electrically refrigerated, are illustrated.

Waldenwoods Film Shown at Ice Cream Manufacturers Meeting

When the Ice Cream Manufacturers met at Waldenwoods, Michigan, last May, J. Robert Crouse arranged for motion pictures of the group showing the crowd in action in the co-operative atmosphere of Cromaine, Sunshine and Friendship halls and random shots of the group with other points of interest about the unique meeting place in the background.

At the recent annual convention of the ice cream manufacturers in Detroit, the film was thrown on the screen during the meeting. A great many of those present thus saw themselves in the movies and had vividly recalled the memories of their enjoyable visit to the Cromaine shrine of co-operation.

"ELECTRIFIED RECIPES" —N. Y. EDISON BOOKLET

Practical Use of Numerous Electrical Appliances Explained

Neutral educational literature issued by the New York Edison Company includes a very high grade booklet of 48 pages and cover entitled "Electrified Recipes." It contains many recipes originated and tested by the company's Bureau of Home Economics, with illustrations of the foods prepared and in process, with the various appliances used. One page is devoted to the care of electrical apparatus and another gives the wattage and cost of operation.

The following heating and motor-driven appliances are featured: Electric Toaster, Electric Chafing Dish, Electric Pressure Cooker, Electric Beater, Electric Grill, Electric Kitchen Unit, Electric Fireless Cooker, Electric Fireless Cooker Stove, Electric Range, Electric Waffle Iron, Electric Ice Cream Freezer, Electric Refrigerator. The following text appears under the cut of the electric refrigerator:

"Electric Refrigeration is cold; dry; convenient. Fany models of Electric Refrigerators are absolutely automatic, maintain a low temperature, regardless of weather conditions, and need no attention.

"In the dry, crisp cold food, vegetables and fruits keep fresh longer—milk has been kept sweet for two weeks!

"The Electric Refrigerator is a time and money saver, for fewer trips need be made to the market; larger quantities of food may be purchased, and better prices obtained; and the cost of upkeep is low.

"Special wiring is necessary with most models."

Following is the data regarding appliances—their wattage and cost of operation:

Motor-Driven Appliances

Appliance	Wattage	Cost to Operate
Circulators for Hot Air Furnaces	100	¾c an hour
Dishwasher	175	1c an hour
Drink Mixer	25	⅓c an hour
Electric Fan, 10 inch	25	⅓c an hour
Exhaust Fan	50	less than ⅓c an hour
Ice Cream Freezer	100	⅓c for 20 minutes
Ironing Machine (Gas Heated)	94	7c an hour (for electricity and gas)
Kitchen Unit	75	¼c an hour
Refrigerator	200	11c a day (approx.)
Sewing Machine	25	less than ⅓c an hour
Vacuum Cleaner	150	1c an hour
Vibrator	25	¼c an hour
Violet Ray	50	⅓c an hour
Washing Machine	175	1c an hour"

Heating Appliances

Chafing Dish	500	3½c an hour
Curling Iron	40	½c an hour
Disc Stove	660	4½c an hour
Fireless Cooker	660	dinner (1 hour)—4c
Grill	660	bacon and eggs (15 min.) for two—1c
Hair Dryer	660	4½c an hour
Heating Pad	60	½c an hour
Hot Plate	660	4½c an hour
Immersion Heater	350	⅓c for 4 minutes
Iron, 3 lb.	330	2½c an hour
Iron, 6 lb.	600	4c an hour, full use
Milk Warmer	450	3 cups water (10 minutes)—½c
Percolator	450	6 cups (15 mins.) 1c
Pressure Cooker	660	3½c a meal
Radiant Heater	660	5c an hour
Table Stove	660	2½c a half hour
Teapot	450	10 minutes for ½c
Toaster	500	20 minutes for 1c
Waffle Iron	660	2½c a half hour
Water Cup and Egg Boiler	450	3c an hour"

Sample Chart of Symptoms and Remedies Prepared for Central Station Service Men

(See article page 1, column 1)

Complaint	Symptom	Examined For	Remedy
No. 1 Ice Cubes Freeze Too Slowly	Machine Does Not Run Correctly	Correct Thermostat Operation, as: Lost Motion Binding of Moving Parts Starting and Stopping Periods	Takeup or Repair Lost Motion in Thermostat Clean and Free Moving Parts Oil Any Wearing Parts Adjust Thermostat to Cut in at Correct Temperature, as 22° F. Check with a Good Thermometer
	Long Time Required for Freezing	Ice on Shelves	Stop Motor, Allow Freezing Unit to Defrost Fill Trays Only About ¾ Full
	Tank Not Frosted at Top	Quantity of Brine in Tank	Fill Tanks as Full as Possible Without Overflowing
	Tank Frosted Only at Bottom, Upper Parts Sweat	Feel in Tank with Wire for Slush, or Ice at Bottom	Drain and Refill Tank with Brine of Correct Specific Gravity. (See Table on Page No.....)
	Slight Sweating Around Edges of Doors	Door Gaskets Out of Place or Damaged Hinges May be Strained, or Loose Latch Bent or Strained Screws Loose in Latch or Hinge	Repair or Replace with Perfect Gasket Bend Latch or Hinge if Necessary to Give Even Pressure All Around Gasket Tighten Screws Test Tightness of Gasket by Pulling a 4" Strip of Paper Between Gasket and Door
No. 2 Machine Will Not Run	1. No Noise in Motor	One or Both Fuses Blown Open in Connections, Wiring, or Windings of Motor Test for Ground	Replace Fuses Repair Open in Wiring, or Windings, or Replace Motor Insulate if Grounded
	2. Humming Noise in Motor	Starting Coil Open at Terminals or Windings Brush or Brush Rigging Sticking Test for Ground	Repair if in Connections; Soldered Joints; or if Possible to get at Break in Windings, or Otherwise Replace Motor Clean and Free Brush and Brush Rigging Insulate if Grounded
	3. Motor Runs But Compressor Does Not	Motor Takeup Bolts Loose Belt Loose, Worn Out, or Broken	Pull Motor Back to Tighten Belt Replace Worn Out or Broken Belt Be Careful to Line Up Motor Pulley and Flywheel

(*Concluded from Page 3, Col. 1*)

enormous retail trade of this country of 45,000,000 population.

"No definite figures can be cited regarding the British foodstuffs retail trade as a whole, but the information available on certain lines, together with the population of the country, give a sufficient indication of the magnitude of the market if, as present conditions appear to indicate, there is a growing appreciation by retailers in perishable commodities of the desirability of the inclusion of refrigeration in the equipment of a shop.

Only 50 Per Cent of Retail Butchers Have Ice Boxes

"The Royal Commission on Food Prices in its report published in 1925 estimated the number of retail butchers in the United Kingdom at 40,000, of which about 4,000 are located in the London area. These shops are reported to serve an average of 200 households each. The estimate includes shops operated by individuals and having a weekly turnover of from $250 to $1,500; shops owned by individuals or firms with a weekly turnover of over $1,500; and the shops of all sizes operated by co-operative societies.

"Trade estimates indicate that 50 per cent or over of the retail butchers have an ice box of some sort. It is unlikely, however, that more than a very small proportion of this number is using modern equipment. In most cases the ice box is the ordinary single compartment chest in which both the ice and meats are kept. Refrigerated display cases are practically unknown, and meats are ordinarily set out in the open air on the shelves of the shop.

"Aside from the normal opportunity in this trade to substitute modern for obsolete equipment and to equip those shops not now using refrigeration, the sanitary feature should be of the utmost importance in the future handling of retail meats.

Retail Grocers and Provision Merchants Offer Good Field

"Bacon, ham, butter, margarin and preserved cream are marketed principally through either retail provision merchants or retail grocers. In this connection it should be noted that the 40,000 retail butchers in the country handle relatively little cured meats, this trade being largely confined to the grocers and provision merchants.

"Since the provision merchants and grocers handle the major portion of the principal commodities affected by the Preservatives Regulations, it would seem that these two trades should offer the best market for refrigerating equipment.

"Exact figures are not available, but an authoritative trade estimate places the number of retail provision merchants and grocers who handle provisions at 70,000 to 80,000 in England and Wales. Of this number the same authority estimates that fully 75 per cent have no refrigerating equipment of any sort, while the remaining 25 per cent do not use refrigeration on the same general scale as is practiced in the United States.

Home Market Being Educated by Association Advertising

"Great Britain has approximately 8,500,000 homes, of which about 1,250,000 are wired for electricity. The Electrical Manufacturers Association and the Electrical Development Association inaugurated a selling campaign in October, 1926, which is to extend until March, 1927. This movement will educate many people in the practicability of home electric devices, and will point out the advantages of employing modern electric equipment. Such advertisement and propaganda should be an aid in the development of a market for electric refrigerators. A direct educational campaign which will clearly and efficiently demonstrate the advantages, economies and utility of household refrigerators, is requisite in order to create increased domestic sales.

Other Fields for Refrigerators

"Hotels, restaurants and caterers commonly use refrigerators and were probably the first group to make widespread use of refrigeration other than cold storage. This field has been slowly developed for many years and, while not offering the same relatively virgin field as the retail trades, there is an expanding market for more and better equipment. The numerous town and country clubs have felt the need for cooling devices but, in many cases, only obsolete types of ice boxes are in use, and a good opportunity is presented for the substitution of up-to-date equipment.

"Dairies long ago apreciated the necessity for cooling apparatus and the most modern and efficient installations are to be found. This market is by no means new or undeveloped but, as in the case of similar fields, expansion and improvement offer good possibilities for the manufacturer of machinery.

"Hospitals and public institutions both offer similar openings in fields where the value and necessity for refrigeration are recognized and where the markets, though by no means untouched, show room for both expansion and improvements. While poulterers and fishmongers appear to have zealously avoided the use of refrigeration in their marketing systems, they too may be a market of the future.

"Soda fountains are slowly increasing and iced drinks are becoming more common in the large cities. Aside from the very considerable ultimate expansion in the market for ice cream and soda fountain equipment, these factors bear on the generally increasing familiarity with different uses of ice by the public."

WHY I LIKE THE ELECTRIC REFRIGERATOR

It Brought Health and Comfort to Illinois Farm Home

One of a Series of Interviews the Society for Electrical Development Has Had With People Who Speak From Their Own Experience.

By SHIRLEY ELEANOR DANE

"Well, of all questions to ask me, a perfect stranger, what I know about electric refrigeration! Well, I do know something about it, though," an Illinois woman told me when I met her in a small town hotel.

"Our farm is six miles from Rockford, on a dirt road that gets hub deep with mud in the spring thaw. I go into town twice a week for fruit, meat and staples, and enjoy it, but before I had this refrigerator that I'm going to tell you about I always hesitated to get more than we could use in a few days because it gets mighty hot and food spoils quickly.

Sickness Convinced Her

"Each year it has been harder to get ice. We have lots of company through the summer, and I'm rather proud of my reputation as a cook, but it takes good fresh food to turn out good victuals.

"Last summer one of my grandchildren got sick and like to died from her stomach. She likes snow pudding so well that I made a special dish of it for her and she'd go to the ice box a couple of times a day and help herself. It spoiled, I guess, without anyone noticing it—you see, I had so much food in the box that the temperature wasn't low enough to keep it all in good condition. Lots of folks don't know that you must have steady cold to preserve food. It took typhoid fever and special nurses and things to teach us that.

Then Came the Electric

"Well, the power line goes near our place, so my boys had my ice box fitted up by the electric company with machinery that keeps a steady cold no matter whether there is much or little food in the box. When every shelf is full it takes a little more 'juice,' I guess, but I never worry about that. I'm thankful that after all these years all I have to do is to press a button and wink at the foxy old sun.

"You should see the quantities of food I buy now and keep a week, ten days and even longer. If my box were bigger I'd buy more—especially meat, for it's better after aging awhile.

"I make frozen desserts from recipes in the book that the power company gave me, and I plan to cook enough one day to serve the next couple of days dressed up with a different sauce or changed some way.

"As a rule I'm not excitable, but in answering your sudden question I wanted you to see for yourself how completely electric refigeration has changed the summers for me. It used to mean endless work and scheming just to get food and care for it. Now I'm as near being a lady of leisure as I ever want to be."

STUDENTS INSPECT FRIGIDAIRE PLANT

University Society Studies Methods Used at Factory.

An inspection tour of the new Delco-Light Frigidaire plant was made November 18 by the University of Dayton student chapter of the American Society of Civil Engineers as guests of D. R. Wells, architect engineer for Charles H. Shook, contracting engineer for the new plant. About 20 members of the chapter composed of junior and senior civil engineering students of the university, with the dean of the department, Brother Bernard Schad, were personally conducted through the plant by Mr. Wells.

Of especial interest to the students was the necessity of systematic organization, a study of the methods of handling both men and material in production work, together with the multiplicity of details attendant to such construction. In the plant itself the young men were particularly impressed with the magnitude of the work acomplished in so short a time. They also got a good idea of the factory layout for machines for production purposes.

To Understand Refrigeration Study the Laws of Heat

Terms Familiar to High School Students of Physics Reviewed and Explained in Training Course for Service Men

Perhaps you can remember a time when you knew the difference between "latent" and "specific" heat, and could write a definition of each term. If so, it is probable that the only reason known to you at the time for acquiring such knowledge was to be able to pass an inevitable examination.

Along comes electric refrigeration, a big new industry, with opportunities for young men of a mechanical turn of mind, and suddenly these terms become important and practical.

In the factories, production is being speeded up under the direction of skilled engineers. In the offices, experienced sales managers are mapping out campaigns and training salesmen. Out in the field, dealers are vigorously going after the business.

But the big job is getting men who know how to install, adjust and apply the equipment intelligently, so that the customer will enjoy complete and satisfactory service. The salesman must know what the machine will do, the service man must know why it does it.

The Nizer Service Correspondence School was instituted to assist in preparing men to become competent in the service branch of the business. The complete course consists of 24 lessons which are offered free to applicants who are properly recommended. Lesson No. 3 continues the discussion of heat which was taken up in the previous lesson. Since the electric refrigerator is really a device for *removing heat*, it is quite evident that a thorough knowledge of the *laws of heat* are essential to a proper understanding of refrigeration.

Lesson III

Latent and Specific Heat

A large number of the problems in refrigeration require a knowledge of LATENT and SPECIFIC HEAT for their solution. Since these two subjects are so important this entire lesson will be devoted to them and to problems which involve their use.

We are already aware of the fact that every time the temperature of a body is increased there must have been a certain amount of heat added to it to bring about the change in temperature. In the same way, every time a body has its temperature lowered it is because a certain amount of heat has been removed from it. As a result of observation we have learned that the same addition of heat will always produce the same amount of temperature increase in the same body. That is, if the addition of 16 B. T. U. to a certain block of iron will cause its temperature to rise 10 degrees today, the addition of 16 B. T. U. to that same block of iron will always cause its temperature to increase 10 degrees, or at least within such limits of temperature as produce no change in the state of the iron.

Definition of Specific Heat

The factor that controls the amount of temperature change in a body for any given addition or taking away of heat is known as the specific heat of the body. By definition, the specific heat is that amount of heat, expressed in B. T. U., required by one pound of the substance to change its temperature one degree Fahrenheit.

Knowing the specific heat of the substance of which a body is composed, it is possible to calculate the amount of heat necessary to produce any desired change in temperature in the body. If the amount of heat added to or taken away from the body be the thing known, it is possible to calculate the temperature change resulting from it. The total amount of heat added to or rejected by a body in any given temperature change is equal to the weight of the body in pounds, times its specific heat, times the number of degrees change in temperature. For example: Suppose it is desired to raise the temperature of an iron pulley which weighs thirty pounds from a temperature of 60° to a temperature of 80°. The specific heat of iron may be taken as .15. How much heat is required to make the change?

Solution:
Temperature change: 80° — 60° = 20°
Heat required: 30 × .15 × 20 =90 B. T. U.

In being cooled, a body gives up the same amount of heat as is required to warm it through the same temperature range. In the example above, if the pulley were lowered in temperature through 20°, it would give up 90 B. T. U.

The specific heat of a substance does not remain constant throughout its entire range of temperature, and although this difference must be taken into consideration in very accurate scientific work, it is usually so slight that we shall not take account of it in our work but shall consider the specific heat as remaining constant. Directly below is a table of the average specific heats of a number of the more common substances.

Table I. Specific Heats

Water	1.000	Glass	0.150
Alcohol	0.640	Rubber	0.480
Calcium Chloride	0.700	Wood	0.330
Silver	0.056	Iron	0.140
Copper	0.090		

Gases have specific heats as well as do liquids and solids, but no values of them are given because of the fact that the specific heat of a gas may change materially and depends upon the conditions to which the gas is subjected. Furthermore, we shall have little occasion to use the specific heat of gas in any of our work.

Specific heat figures largely in computations which have to do with the articles being refrigerated. Latent heat has more to do with the process of refrigeration itself, and by reason of this is of perhaps greater importance to us.

We know from our own experience that most substances can and do exist in three different states, i. e., solid, liquid, and gas. Water is the outstandingly common example of this, for we have it as ice which is the solid, water which is the liquid, and steam which is the gas.

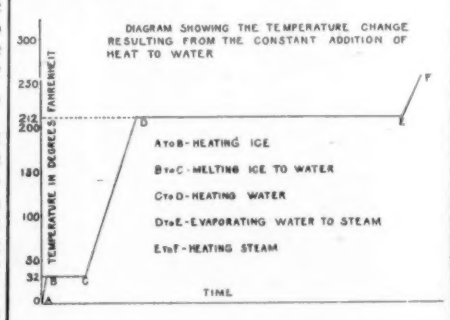
Perhaps the most interesting fact in connection with the changing of a substance from one state to another is the part that heat plays in the process for the state of the substance, that is, whether it be solid, liquid or gas, depends more than anything else upon the amount of heat within the body.

By way of experiment let us take a block of ice and add heat to it at a constant and known rate, and while doing this, very carefully observe the changes which take place in the ice both as regards its temperature and condition. To simplify our computations, let the ice weigh exactly one pound, and let its original temperature be zero degrees. (0° F.)

As we should expect, the first addition of heat to the ice serves to increase its temperature, and as we continue to add heat the temperature rises degree after degree until it has reached the height of 32 ° F. Until this point is reached, no melting of the ice takes place, and all the heat which we add goes to increasing the temperature of the ice. Since the specific heat of ice is .5 the amount of heat required to raise its temperature from 0° to 32° must be $1 \times .5 \times 32 = 16$ B. T. U. As soon, however, as 32° is reached the temperature of the ice stops rising and the added heat now all goes to melting the ice. If our instruments were capable of recording it, we should find that exactly 144 B. T. U. are required to completely melt the pound of ice. Furthermore, the water formed as a result of the melting of the ice is still at 32°. Just as soon as the last particle of ice is melted the temperature of the water begins to rise and continues to do so until the temperature of 212° is reached. 212° is the boiling point of water at atmospheric pressure, and at that point we shall observe a repetition of the occurrence which took place during the melting of the ice, that is, the temperature will again remain constant and the added heat will go to changing the water into steam, and just as the water was of the same temperature as the ice from which it was formed, so will the steam be at the same temperature as the water from which it was created. If we again had instruments with which to measure it, we should find that 970.4 B. T. U. were used in changing the pound of water into steam. Should heat be added beyond the point where the last particle of water is evaporated, it will be used to increase the temperature of the pound of steam already formed. Set out in tabular form the heat quantities used in our experiment appear as follows:

To warm ice from 0° to 32°	16	B.T.U.
To melt ice	144	B.T.U.
To warm water from 32° to 212°	180	B.T.U.
To change water into steam	970.4	B.T.U.
To warm steam		

If a recording thermometer had been used in the experiment, the chart which it would have drawn would appear like the sketch below.



The first part of the line shows the temperature of the ice increasing as heat is added to it; the second part, the melting of the ice at constant temperature; the third part the warming of the water from 32° to its boiling point; the fourth part the boiling of the water, and the last part the heating of the steam.

From all of the foregoing we see that all the heat added to substances goes either to increasing its temperature or to changing its state. That part which is used in the change of state is known as latent heat, —"latent heat of fusion" being applied in the case of the change between solid and liquid, and "latent heat of evaporation" referring to the change from liquid to gas.

Significance of Latent Heat

A study of the sketch, and table just preceding it, shows how large the latent heat of evaporation of the water is as compared with the other heat values. This same general relationship holds true with nearly all other substances, and the student should note the significance of this fact because in perhaps 99% of the applications of mechanical refrigeration it is the latent heat of evaporation of some substance which is responsible for the actual refrigeration.

The latent heat of evaporation of a substance is not a constant but changes as the temperature and pressure under which the substance is forced to evaporate change. Table II gives the latent heat of some of the more common substances under given conditions:

Table II. Latent Heat of Evaporation at 5° F.

Ammonia	565.0 B.T.U. per pound
Sulphur Dioxide	170.7 B.T.U. per pound
Methyl Chloride	178.6 B.T.U. per pound
Ethyl Chloride	177.0 B.T.U. per pound
Carbon Dioxide	114.8 B.T.U. per pound

To give a better understanding of the subject the balance of this lesson is devoted to problems dealing with specific and latent heat. The student is urged to follow each problem through carefully so as to become entirely familiar with it.

Problems

I.

How much heat must be added to 30 pounds of water to increase its temperature from 45° F. to 170° F.?

Solution:
Specific heat of water is 1
Temperature change is 170° F.—45° F. = 125° F.
Heat added is 30×1×125=3750 B. T. U.

II.

Suppose the water in the above problem is contained in a glass vessel whose weight is two pounds. How much additional heat must be added to take care of warming up the glass? The specific heat of glass is .16.

Solution:
Temperature change: 170° F.—45° F.= 125° F.
Heat required: 2×.16×125=40 B. T. U.
The heat required to warm both the water and its container is therefore
3750+40=3790 B. T. U.

III.

How much heat must be added to a 25-pound block of ice at 10° F. to change it into water at 150° F.

Solution:
The problem must be divided into three separate steps as follows:
(a) Find heat necessary to raise ice from 10° F. to 32° F., which is its melting point. The specific heat of ice is .5.
Temperature change:
32° F.—10° F.=22° F.
Heat required: $25 \times .5 \times 22 = 275$ B. T. U.
(b) Find heat necessary to melt ice. The latent heat of fusion of ice is 144 B. T. U.
Heat required: $25 \times 144 = 3600$ B. T. U.
(c) Find the heat required to warm the water from 32° F. to 150° F.
150° F. — 32° F. = 118° F.
Heat required: $25 \times 1 \times 118 = 2950$ B. T. U.
Total heat required is the sum of a+b+c=275+3600+2950=6825 B.T.U.

IV.

How much heat is required to completely change 15 pounds of water at 40° into steam at 212° F.

(a) 212° F.—40° F.=172° F. temperature change.
Heat required: 15×1×172=2580 B. T. U.
(b) Latent heat of steam at 212° F. is 970.4 B. T. U.
Heat required: 15×970.4=14,556 B. T. U. required to change water into steam.
Total heat required: 2580+14,556=17,136 B. T. U.

V.

A butcher has 300 pounds of meat at a temperature of 80° F. which he wishes to cool to a temperature of 40° F. If the specific heat of the meat be .8 this means that there will have to be removed from the meat $300 \times .8 \times (80° — 40°) = 9600$ B. T. U. to reduce it to the desired temperature. Let us assume that there are no heat losses and that the cooling is to be done by ice. How much ice must be completely melted to supply the above amount of refrigeration?

Solution:

$$\frac{9600}{144} = 66.6 \text{ pounds of ice}$$

In arriving at the above answer, we assumed that only the latent heat of fusion of the ice was available for refrigeration. This is not entirely correct, for after the ice has melted, the water which is formed from it is still at 32°, which is 8° colder than the meat, and therefore could be used for cooling purposes. Taking account then, of the cooling effect of the water in addition to the heat absorbed by the melting of the ice, how much ice must be used to absorb the original 9600 B. T. U.?

40° — 32° = 8°
1 × 1 × 8 = 8 B. T. U.

The heat which will now be absorbed by 1 pound of ice at 32° in changing to water at 40° F. will now be 144 + 8 = 152 B. T. U. The amount of ice required, taking advantage of the cooling effect of the water, is therefore

$$\frac{9600}{152} = 63.2 \text{ pounds}$$

Electric Refrigeration Opens New Era in Architectural Planning

Provides Greater Efficiency and Flexibility In Food Service Arrangements for Residential and Commercial Buildings

An immediate annual market for 850,815, and a potential market for 1,273,340 electric refrigerators of the domestic cabinet type, in new buildings planned by architects, is indicated by statistics compiled by the Research Department of *The Architectural Forum*.

The report shows the number of new dwellings, apartments, hotels and institutions constructed annually and estimates the average number of units which should be used in each type and size of building. The importance of the architect as a factor in the purchase of equipment is emphasized together with the importance of the electric refrigerator as a new factor in the design of architect-planned buildings. Extracts from the report follow:

Analysis of New Building Market

"There are several important questions which must naturally arise in the mind of the manufacturer or sales agent of this type of equipment when he gives consideration to his market as represented in the new building field.

1. In what types of new buildings is the incorporation of electric refrigerators logical as standard original equipment?

2. How large is this annual market and what is the comparative annual market as subdivided by building types?

3. Who controls the original investment for new building equipment such as electric refrigerators?

"Considering the above questions in the order presented, the first analysis should cover the various types of new buildings in which the use of electric refrigerators is logical as standard equipment. In the large table given below will be found a subdivision of the new building market indicating the various building types in which the use of one or more electric refrigerators will be found practicable.

"The second column in this table gives the average annual number of new buildings of each of these types.

The third column assumes the logical average number of electric refrigerators required in each type of building.

"The fourth column shows the multiplication of the two preceding columns to give the total potential annual market for electric refrigerators in each of the building types.

Immediate Market Estimated

"It is realized that this potential market is not immediately logical for all buildings in all types. Therefore, the fifth column in the tabulation establishes what seems to be a reasonable percentage of the total potential market which might immediately be converted to the use of electric refrigerators as standard equipment. The final column represents the immediate *annual* market for electric refrigerators in the new building field, computed by taking the logical percentage of the potential annual market in each classification. This tabulation answers Question No. 2 as outlined.

"There are several very good reasons why architects should be interested in considering the equipment of buildings with electric refrigerators. In the following paragraphs these will be touched upon briefly.

"The first and most important reason is that the use of electric refrigeration simplifies planning not only in the residential field, as represented by dwellings and apartment buildings, but for other types of buildings where the question of food service is involved. In developing the plans for individual dwellings, the kitchen plan becomes immediately more efficient and more flexible when electric refrigeration is installed. The delivery of ice has always complicated the domestic plan, requiring either a certain location in the kitchen or often a small service entry outside the kitchen. This delivery being eliminated, it is evident that the refrigerator can be placed anywhere to suit the kitchen plan and that the principal reason for the service entry is eliminated, thus allowing a larger efficient area for the kitchen and greater flexibility in the arrangement of standard kitchen equipment.

Does Away With Separate Service Entrances

"The use of electric refrigerators virtually opens a new era in the planning of apartment buildings. Elimination of the ice delivery problem in many instances will do away with separate service entrances and will allow for still greater compactness in planning of kitchens and the domestic service portions of the apartment layout. Similarly, in other buildings where food service is required, it is evident that the elimination of ice delivery can result in the more efficient arrangement of the kitchen and definite space saving which means a saving in construction cost.

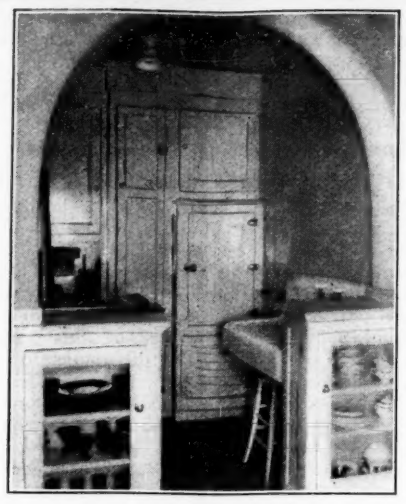
"In addition to the important factors of increased plan efficiency and actual space saving, there are, of course, the outstanding advantages to the owner and tenant represented by the more convenient, more dependable and more sanitary refrigeration service provided by the electric cabinet units. The architect is not blind to these advantages, as it is part of his business to incorporate in buildings of all kinds modern equipment which will tend to provide greater elements of comfort, service and economy from the viewpoint of the owner and prospective tenant.

"The sales approach to the architect may be interpreted from the reasons for his interest as stated above. His is a direct buying power, as represented by recommendation and by specifications; and, given real reasons for interest in equipment such as this, the architect will exert a powerful sales influence on owners. The architect as a sales objective presents also the great advantage of *recurring sales*. While the decision of the owner usually covers one project only, the interest of the architect may introduce equipment such as this into many buildings year after year."

THE ANNUAL "ARCHITECTURAL MARKET" FOR ELECTRIC REFRIGERATORS

Compiled from average building statistics by the Research Dept., The Architectural Forum
Copyright, 1926, by The Architectural Forum
(Stores, Restaurants and Commercial Units NOT Included)

BUILDING TYPES In which electric refrigerators should become standard equipment	Annual No. of New Buildings	Average No. Refrigerators per Building		Potential Market (Number of Units by Building Type)	Percentage Logical for Immediate Sales	Immediate Market for Electric Refrigerators
DWELLINGS— $10,000 to $20,000	112,000	1	For Kitchen	112,000	35%	39,200
DWELLINGS— $20,000 to $50,000	42,000	1	For Kitchen	42,000	70%	29,400
DWELLINGS— Above $50,000	3,400	2	For Kitchen, Pantry or Nursery	6,800	100%	6,800
DWELLINGS— Better Types of 2 and 3 Family	18,000	2¼	For Kitchens	40,500	35%	14,175
APARTMENT— 8 to 24 Family	29,000	14	For Kitchens	406,000	60%	243,600
APARTMENT— 25 to 48 Family	14,000	32	For Kitchens	448,000	70%	313,600
APARTMENT— 49 to 114 Family	1,700	64	For Kitchens	108,800	90%	97,920
APARTMENT HOTELS— 24 to 300 Apartments	900	100	For Kitchenettes or Pantries	90,000	100%	90,000
HOTELS— Under 100 Rooms	1,320	3	For Kitchens or Pantries	3,960	80%	3,168
HOTELS— Over 100 Rooms	260	8	For Kitchens or Serving Pantries	2,080	90%	1,872
Refrigerators in Serving Pantries, etc.						
HOSPITALS	700	5	For Kitchens, Diet Kitchens, Pantries	3,500	100%	3,500
CLUBS	1,100	3	For Kitchens or Serving Pantries	3,300	80%	2,640
SCHOOLS— With Cafeterias	1,600	2	For Kitchens and Lunch Counters	3,200	70%	2,240
INSTITUTIONS	600	3	For Kitchens or Serving Pantries	1,800	80%	1,440
INDUSTRIAL— Cafeterias, etc.	700	2	For Kitchens and Lunch Counters	1,400	90%	1,260
TOTAL			Potential Market			1,273,340
			Immediate Market			850,815



For the Kitchenette

An attractive kitchenette layout of the type that has become so popular in the new and modern city apartment buildings. The built-in cabinets are designed to accommodate a standard size Kelvinator.

Queries from the Field

Q 11: Established concern, with house to house selling organization, desires to distribute electric refrigerator in Cincinnati territory.

Q 12: New Jersey Oil Burner distributor desires to handle an electric refrigerator of national repute.

Q 13: Florida Radio dealer wants to handle electric refrigerator. Requests information on methods of handling time payment paper.

Q. 14: Established Electrical Jobber in Toronto is interested in distributing electric refrigerator.

Q. 15: New York representative in Los Angeles, conducting sales organization on the Pacific Coast, wants to establish connection with electric refrigerator manufacturer.

NOTE: Names of the above will be furnished on request by Electric Refrigeration News, 409 E. Jefferson Ave., Detroit. Please refer to queries by number.

Newspaper Advertisements for Co-operative Use

The newspaper advertisement shown below is one of a series offered by the Society for Electrical Development to its members. It is especially suitable for central stations desiring to sell the "idea" of electric refrigerator, rather than a particular make. The series is also designed for the use of local electric leagues and other co-operative organizations.

Comments of Readers

"We have read your current issue with a great deal of interest and believe that your publication will meet a long felt want in this industry."—C. L. Lewis, gen. mgr., Electro-Kold Corp., Spokane, Washington.

"I was indeed pleased to find that you had undertaken the publishing of a paper of this kind."—E. R. Mason, Central Hudson Gas and Electric Co., Poughkeepsie, N. Y.

"Congratulate you on the very fine paper you are publishing. It is interesting, and instructive to read, and we wish you the greatest success."—R. C. Harmon, Ferro Enamel Supply Co., Cleveland, Ohio.

"We wish to congratulate you on this paper. We believe it will fill a real want in the industry."—H. R. VanDeventer, New York, N. Y.

"I have enjoyed it and I consider it a very interesting publication."—G. E. Durban, Delco-Light Co., Dayton, Ohio.

"We believe you are accomplishing much for electric refrigeration in your News, and personally, I find it very interesting and have routed it to some of our other departments."—F. H. Mason, Rochester Gas & Elec. Corp., Rochester, N. Y.

"We congratulate you on the first issue of Electric Refrigeration News."—F. P. Obee, branch mgr., Power Plant Engineering Co., Portland, Ore.

Comments of Readers

"I wish to say that I enjoyed reading your first publication very much. I am sure that the men in the field have a great need of such a paper. Here is good wishes and the best of luck."—Fred C. Snodgrass, 8 East Carillo St., Santa Barbara, Calif.

"The industry badly needed an unprejudiced trade journal."—W. H. Holmes, Detroit, Mich.

"I feel that you are to be congratulated and complimented on this paper. It looks to me like an excellent publication and a very interesting one."—B. Lichtenberg, Alexander Hamilton Institute, New York City, N. Y.

"It is a real business paper and handled in a mighty human and interesting style."—L. Jay Hannah, Chicago, Ill.

CLASSIFIED COLUMN

EXECUTIVES WANTED

Old established manufacturing concern ready to organize Electric Refrigeration Sales Division to market product. Six years developing and two years on the market. Give complete history in first letter. Box 5, Electric Refrigeration News.

POSITION WANTED

Service man with wide selling and servicing ability experienced in household and small commercial refrigerating machines, capable of training sales and service men, desires position with responsible firm. Address inquiries to Box 4, Care of Electric Refrigeration News.